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# MINERAL INDUSTRY SURVEYS

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BUREAU OF MINES



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## MOTOR GASOLINES, SUMMER 1970





# MOTOR GASOLINES, SUMMER 1970

by

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## INTRODUCTION

The properties of motor fuels sold through service stations in the United States are reported in accordance with a cooperative agreement between the American Petroleum Institute and the Bureau of Mines of the United States Department of the Interior. By agreement with the American Petroleum Institute, identification of the data by item number is confidential.

Analytical data for 5,104 samples that represent the products of 69 companies are included. Company representatives collected the samples during June, July, and August 1970. As in previous surveys, the gasolines covered by this survey include those from both large and small suppliers. Laboratories of various refiners, motor manufacturers, and chemical companies obtained and submitted the data to the Bureau of Mines for compilation. Motor-gasoline survey reports published during the past 10 years are listed on page 4.

## SUMMARY

The characteristics of motor gasolines for summer 1970 are summarized in table 1, and for comparison, those for summer 1969 are shown in table 2. Trends of some of the more important characteristics for several years are shown in figures 1 and 2. The following data show trends of national average octane numbers during recent years:

	<u>Regular-price</u> <u>Octane number</u>		<u>Premium-price</u> <u>Octane number</u>	
	<u>Research</u>	<u>Motor</u>	<u>Research</u>	<u>Motor</u>
Winter 1968-69	93.8	86.3	99.8	92.2
Summer 1969	93.8	86.1	99.9	92.0
Winter 1969-70	93.8	86.3	99.8	92.2
Summer 1970	93.8	86.3	99.8	92.2

Tables 3 and 4 show regional average octane numbers of regular- and premium-price fuels.

Data for third grade, intermediate grade, and super-premium gasolines are included in table 5.

Data for gasolines that contained less than 0.75 g Pb/gal are included in table 6. Data for each of the 38 items in the table are averages for the number of samples indicated. Eighty-nine samples representing 9 brands marketed in 23 locations are represented in the table.

## DISCUSSION OF DATA

Terms used in the surveys have the following meanings:

District: The designation of a marketing area for collecting samples and data. The present arrangement of 17 districts, developed by the CFR Committee, <sup>1/</sup> was selected with reference to the specifications on motor gasolines, refinery locations, population centers, and arteries of commerce such as navigable rivers. The States or parts of States in each district are indicated in the headings of table 3 and are shown in figure 5.

Brand: The gasoline sold within a given price group and by a given trade name.

Item: The index number assigned to a given brand in a given district. The data for each item represent the average of those submitted for that brand in that district. The number of samples represented follows the item number.

Sample: The supply of gasoline obtained at the service station and analyzed in the laboratory

Table 3 presents by districts data for gravity in degrees API, sulfur, gum, lead, research- and motor-method octane numbers, Reid vapor pressure, and distillation characteristics of the motor fuels collected. The tests were made according to American Society for Testing and Materials standards. <sup>2/</sup>

Corrosion test results are not included in the district tables as all the reported numbers are "1," according to the corrosion scale given in table 1 of ASTM D130. <sup>2/</sup>

- 
- <sup>1/</sup> Coordinating Fuel and Equipment Research Committee (formerly the Coordinating Fuel Research Committee) of the Coordinating Research Council, Inc. From 1935 to 1948 the motor-gasoline surveys were conducted under a cooperative agreement between the Coordinating Research Council and the Bureau of Mines.
- <sup>2/</sup> American Society for Testing and Materials, 1970 Book of ASTM Standards, Part 17, Petroleum Products -- Fuels; Solvents; Burner Fuel Oils; Lubricating Oils, Cutting Oils; Lubricating Greases; Hydraulic Fluids, Philadelphia, Pa., 1,294 pp.



Gum test data are reported to the nearest whole number. The distillation temperatures, corrected to barometric pressure at 760 mm Hg, are those for percent evaporated.

Average values follow the tabulated data in table 3 for the respective grades of fuel shown in each district. The averages of the various properties were computed without reference to the total number of samples represented by each item.

The district averages from table 3 are shown in table 4 with the number of brands and number of samples for regular- and premium-price gasoline in each district. The national averages for each of the properties of fuels sold in each of the 17 districts are given at the end of the table.

Table 5 shows data for third grade, intermediate grade, and super-premium motor gasolines.

Figures 1 and 2 illustrate trends in the national averages of certain properties of regular- and premium-price gasolines, respectively, since the summer of 1946. Averages for the winter surveys are plotted on the lines that represent the years and for the summer surveys between the lines. Octane-number points are connected for successive surveys, but those for Reid vapor pressure and distillation temperatures are plotted separately for summer and winter surveys. Charts that show plots of these properties from 1935 (except winter 1941-42 and summer 1942) are presented in the survey report on motor gasolines for winter 1964-65 and preceding reports. 3/

Figures 3 and 4 illustrate distribution (frequency) of octane values by numbers of samples for all grades of fuel represented. Each bar represents one-half octane number.

Data for gasolines that contained less than 0.75 g Pb/gal are included in table 6. The analyses represented by the data in table 6 also are included in the items in tables 3 and 5 with their respective grades. However, the data in table 6 do not correspond to item numbers in the other tables because data in table 6 were collated for each brand marketed in each city, rather than for each brand marketed in an entire district.

Tables 7 and 8 show the percentages of all samples for each district at each whole octane number level, cumulated according to increasing octane number.

---

3/ Blade, O. C., Motor Gasolines, Winter 1964-65. Bureau of Mines Petroleum Products Survey No. 40, 38 pp. (in cooperation with the American Petroleum Institute).

The districts, locations, and number of samples of gasoline represented are listed in table 9 and shown on the map in figure 5. The locations are named for the principal cities in the respective vicinities, and include suburbs and adjacent communities. The area of the circle at each location is proportional to the number of samples obtained. The summary at the end of table 9 lists by district, the number of locations, samples, and the percentages of the latter based on the total reported.

This report does not discuss the significance of the data presented. Reference may be made to the ASTM specification 4/ for motor gasoline and its appendix, "Significance of ASTM Specifications for Motor Gasoline," at a technical library.

#### LIST OF MOTOR-GASOLINE SURVEY REPORTS, 1961-70

<u>Author</u>	<u>Season and Year</u>	<u>PPS Report No.</u>	<u>Date Published</u>	<u>No. of pages</u>
In cooperation with the American Petroleum Institute				
Blade, O. C.	Summer 1961	22	Jan. 1962	32
Do.	Winter 1961-62	25	June 1962	33
Do.	Summer 1962	27	Jan. 1963	32
Do.	Winter 1962-63	30	June 1963	32
Do.	Summer 1963	33	Jan. 1964	35
Do.	Winter 1963-64	35	June 1964	40
Do.	Summer 1964	37	Dec. 1964	40
Do.	Winter 1964-65	40	July 1965	38
Do.	Summer 1965	43	Jan. 1966	39
Do.	Winter 1965-66	45	June 1966	38
Do.	Summer 1966	48	Dec. 1966	38
Do.	Winter 1966-67	50	June 1967	38
Do.	Summer 1967	53	Dec. 1967	38
Do.	Winter 1967-68	55	June 1968	39
Do.	Summer 1968	58	Jan. 1969	38
Do.	Winter 1968-69	60	July 1969	38
Blade, O.C. and Ella Mae Shelton	Summer 1969	63	Jan. 1970	38
Shelton, Ella Mae and C. M. McKinney	Winter 1969-70	66	Aug. 1970	47
Do.	Summer 1970	This report		

4/ American Society for Testing and Materials, Tentative Specifications for Gasoline (D439): 1970 Book of ASTM Standards, Part 17 (see footnote 2), pp. 173-183.



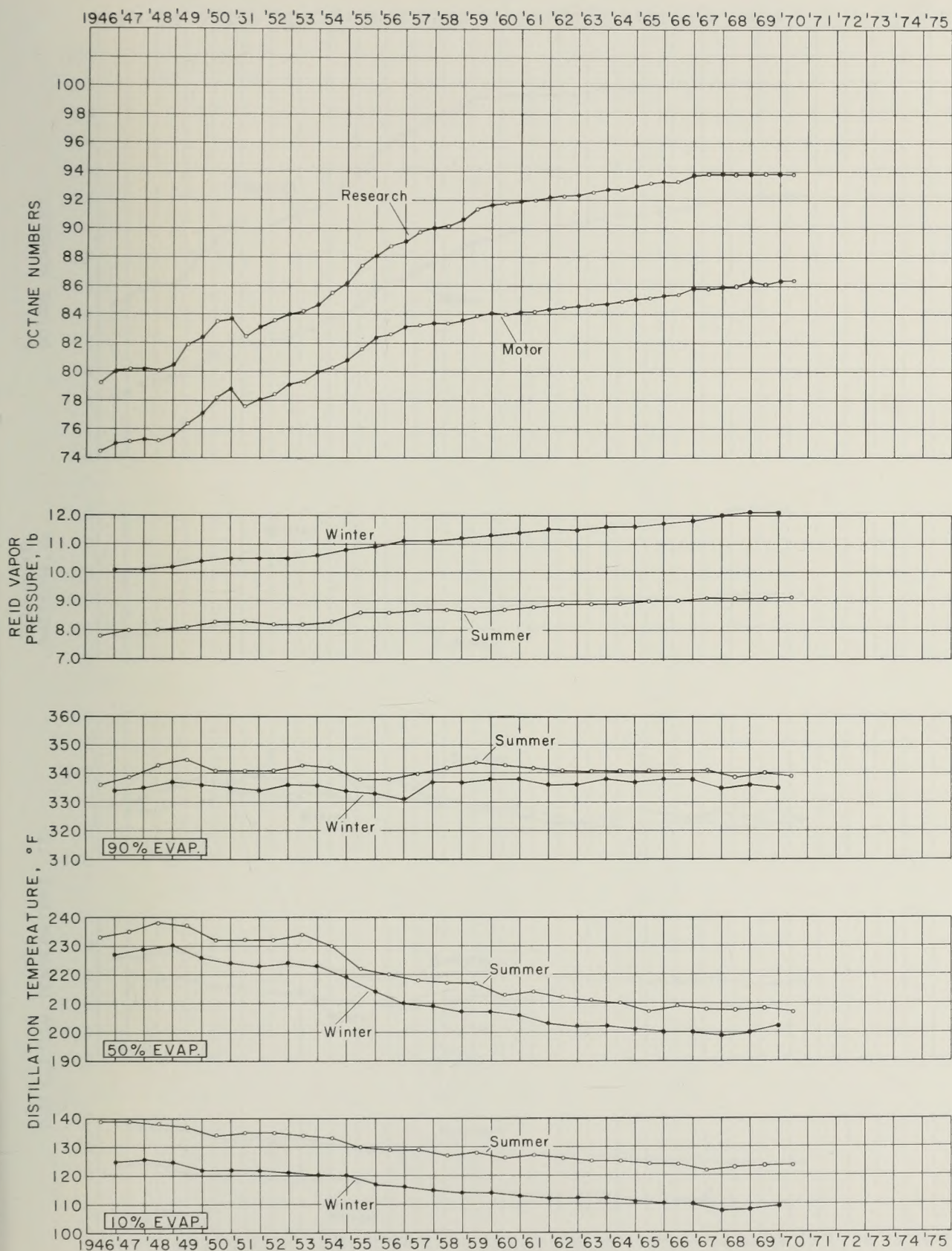


FIGURE 1.—Trends of Certain Characteristics of Regular-Price Gasolines.





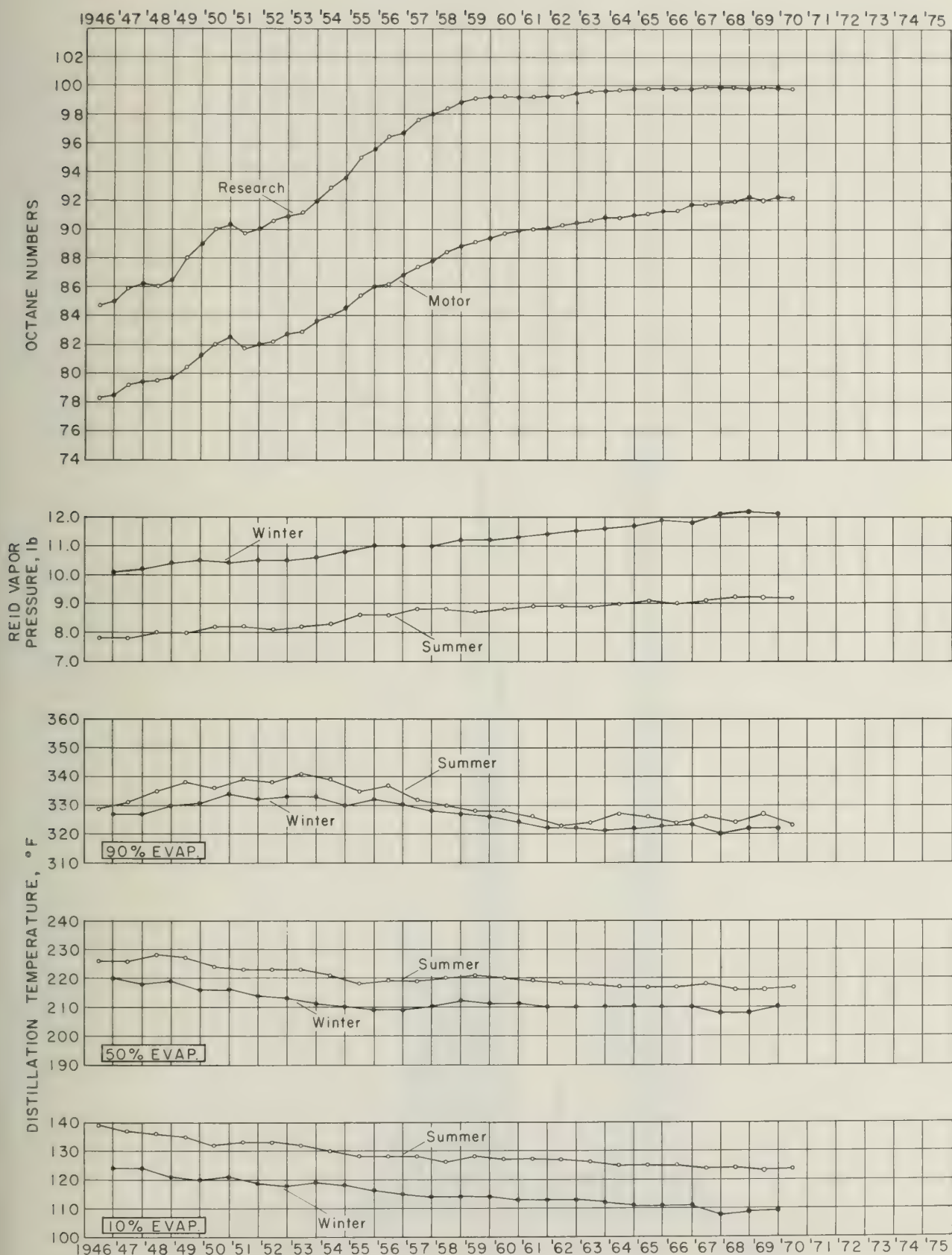


FIGURE 2.—Trends of Certain Characteristics of Premium-Price Gasolines.





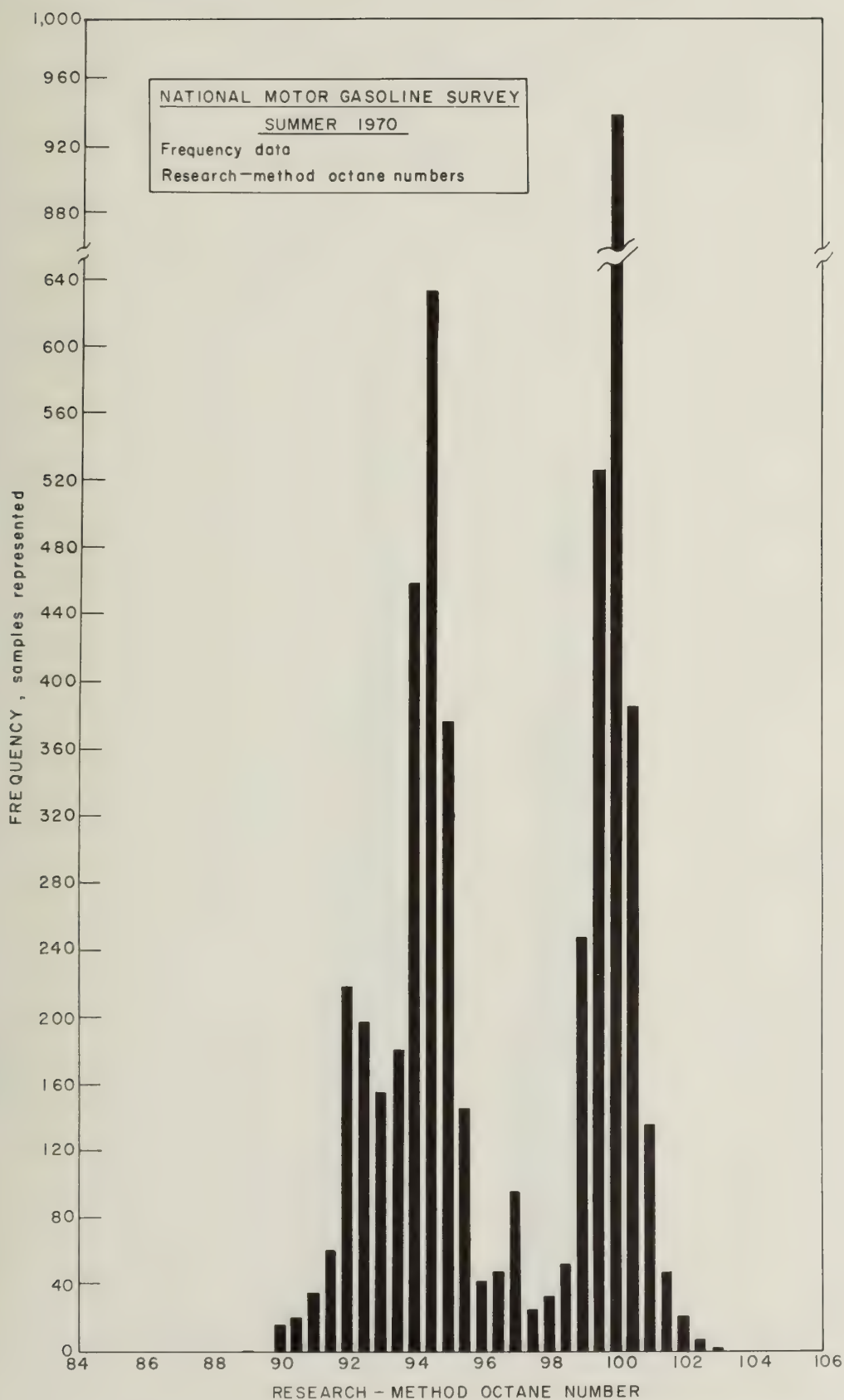


FIGURE 3.— Distribution of Research — Method Octane Numbers.





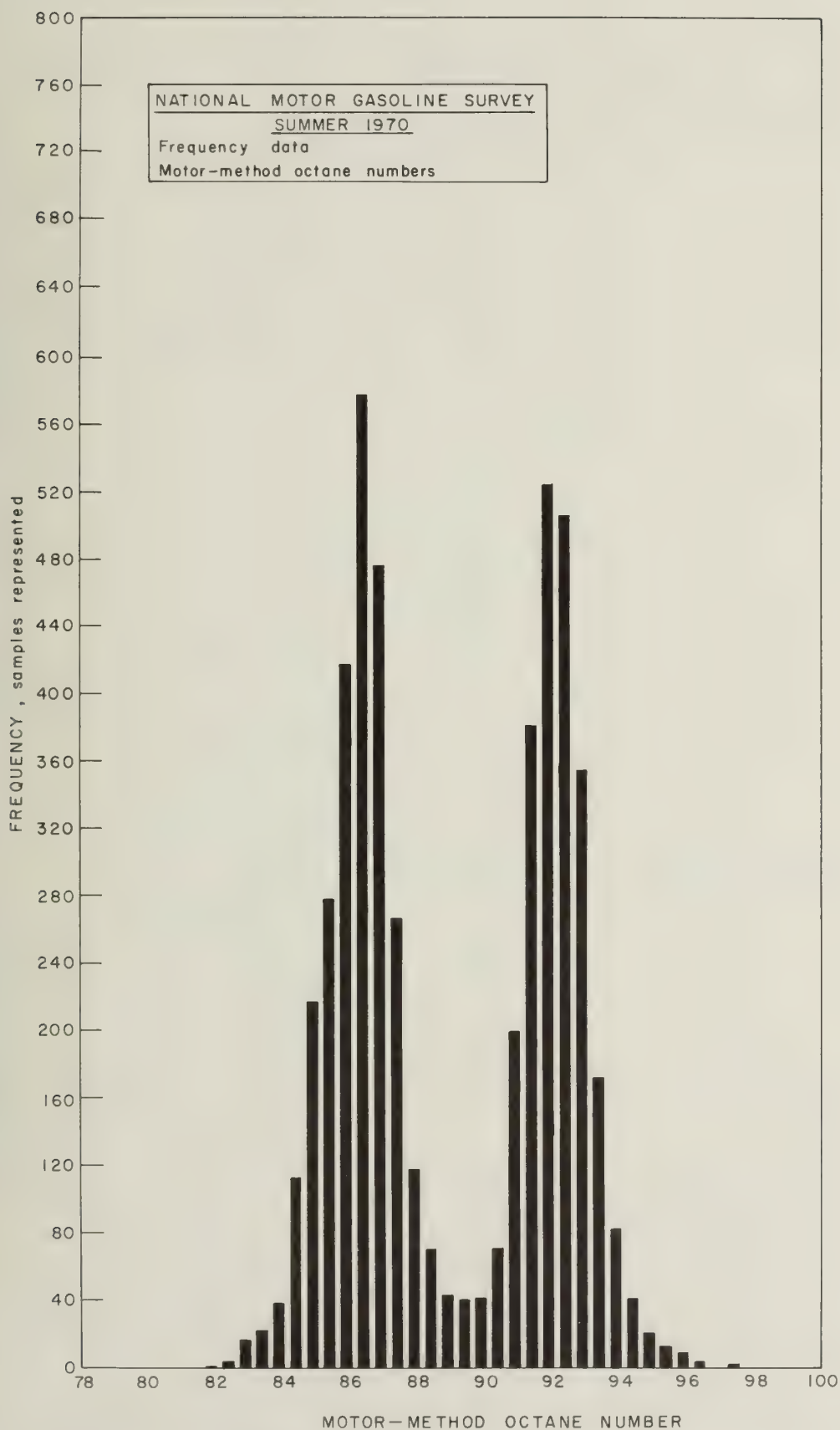


FIGURE 4. — Distribution of Motor—Method Octane Numbers.





TABLE 1. - Summary of values, motor gasoline survey, summer 1970

Test	ASTM method	Regular-price gasoline	Premium-price gasoline
		Average	Average
Gravity, °API	D287	61.1	60.8
Corrosion, No.	D130	1	1
Sulfur content, wt %	D1266	0.042	0.021
Gum, mg/100 ml	D381	1	1
Lead, g/gal	D526	2.43	2.81
Octane number, Research	D908	93.8	99.8
Octane number, Motor	D357	86.3	92.2
Reid vapor pressure, lb	D323	9.1	9.2
Distillation	D86		
Temp, °F			
IBP		93	92
5% evaporated		110	109
10% do		123	124
20% do		143	148
30% do		163	172
50% do		207	217
70% do		260	257
90% do		339	323
95% do		372	355
End point		410	399
Residue, vol %		0.9	0.9
Loss, vol %		1.5	1.6

TABLE 2. - Summary of values, motor gasoline survey, summer 1969

Test	ASTM method	Regular-price gasoline	Premium-price gasoline
		Average	Average
Gravity, °API	D287	61.1	60.9
Corrosion, No.	D130	1	1
Sulfur content, wt %	D1266	0.042	0.022
Gum, mg/100 ml	D381	1	1
Lead, g/gal	D526	2.48	2.89
Octane number, Research	D908	93.8	99.9
Octane number, Motor	D357	86.1	92.0
Reid vapor pressure, lb	D323	9.1	9.2
Distillation	D86		
Temp, °F			
IBP		92	91
5% evaporated		110	108
10% do		123	123
20% do		143	146
30% do		163	170
50% do		208	216
70% do		262	259
90% do		340	327
95% do		373	359
End point		414	406
Residue, vol %		1.0	0.9
Loss, vol %		1.3	1.4

TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS

DIST. 1 NORTHEAST  
MAINE, MASS., N.H., VT., AND NORTHERN N.Y.

REGULAR-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS %		
						RES, ASTM D908	MOT, ASTM D357		R+M ---	TEMPERATURE, F (CORRECTED TO 760 MM HG)		PERCENT EVAPORATED										
										IBP	EP	5	10	20	30	50	70	90	95			
1	5	60.8	0.034	2	2.39	94.5	86.9	90.7	9.9	93	111	124	144	165	214	268	349	371	420	0.9	2.1	
2	7	62.1	.024	2	1.77	95.1	87.0	91.1	9.8	85	99	113	133	157	201	252	318	349	389	1.1	1.6	
3	8	57.5	.032	2	1.73	95.0	86.7	90.9	8.9	93	109	123	148	173	229	290	351	378	414	1.1	1.7	
4	1	59.6	.027	1	2.44	96.7	87.8	92.3	10.6	88	100	116	140	163	210	257	329	359	410	1.0	2.0	
5	3	60.2	-	-	-	95.2	86.5	90.9	9.9	95	109	121	139	159	211	278	345	371	416	1.1	1.6	
6	5	62.2	.017	1	2.50	94.4	88.1	91.3	9.8	87	103	116	137	157	204	263	346	378	410	.9	2.1	
7	6	60.6	.050	1	1.77	94.9	86.5	90.7	9.5	89	105	116	135	156	202	272	359	387	420	1.0	1.7	
8	3	61.2	.028	-	2.19	94.7	86.3	90.5	9.0	92	111	124	142	162	209	262	339	370	400	.7	1.3	
9	4	60.5	.019	2	1.77	94.7	86.7	90.7	9.7	95	108	118	137	157	206	268	353	383	415	.9	1.9	
10	8	62.4	.040	1	2.47	94.6	86.8	90.7	9.7	90	105	117	137	159	208	263	339	373	407	1.0	1.6	
11	1	60.2	.030	1	2.56	95.2	86.7	91.0	9.5	93	106	121	143	164	211	270	345	381	424	1.0	2.0	
12	3	60.8	.062	-	2.50	95.1	86.1	90.6	9.2	84	104	118	142	164	214	272	348	380	412	.7	1.8	
13	1	59.6	.047	1	2.57	94.6	87.3	91.0	9.8	88	100	113	135	158	211	276	350	390	423	1.0	2.5	
14	5	62.8	.028	1	2.68	94.6	86.9	90.8	9.6	91	105	118	138	156	198	248	330	360	405	.9	2.1	
15	4	62.1	.102	2	3.17	95.5	85.8	90.7	9.2	93	107	120	139	158	199	260	349	380	415	1.0	1.0	
AVERAGE		60.8	.039	1	2.32	95.0	86.8	90.9	9.6	90	105	119	139	161	208	267	343	374	412	1.0	1.8	
SAMPLES		64																				

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TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 2 MID-ATLANTIC COAST  
R.I., CONN., N.J., DEL., MD., VA., CENTRAL AND SOUTHERN N.Y., AND EASTERN PA.

REGULAR-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D301 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES %	LOSS %			
						RES, ASTM D908	MOT, ASTM D357		R+M --- 2	TEMPERATURE, F (CORRECTED TO 760 MM HG)														
										PERCENT EVAPORATED														
										IBP	5	10	20	30	50	70	90	95	EP					
32	9	61.1	-	-	1.97	95.0	86.3	90.7	8.6	90	106	119	137	158	201	258	348	380	409	0.7	1.1			
33	30	61.1	0.044	2	2.31	95.1	86.4	90.8	9.8	89	104	118	138	160	205	262	345	378	412	1.0	1.7			
34	28	58.7	.030	3	2.01	94.6	86.6	90.6	9.1	92	107	121	143	167	221	282	352	381	416	1.0	1.7			
35	12	63.1	.030	2	2.41	94.6	87.2	90.9	9.4	96	110	120	137	153	194	253	337	369	412	1.2	1.5			
36	3	59.4	.022	-	2.21	95.1	88.1	91.6	8.7	90	100	114	135	154	214	302	356	378	416	.7	1.3			
37	22	61.9	.034	1	2.45	94.3	86.9	90.6	9.2	91	106	119	139	159	204	263	351	384	411	1.0	1.5			
38	28	60.5	.056	1	2.23	94.5	86.7	90.6	9.4	89	105	118	137	156	204	269	351	382	416	1.0	1.7			
39	13	61.1	.032	1	1.56	95.1	86.0	90.6	9.1	90	108	121	140	160	204	259	329	355	394	.7	1.5			
40	24	59.9	.022	1	1.77	94.9	87.1	91.0	9.4	89	103	116	136	158	208	269	348	378	412	1.0	2.0			
41	30	60.5	.025	2	2.16	94.6	86.5	90.6	8.9	90	107	120	141	163	210	264	340	373	407	1.1	1.4			
42	3	63.4	-	-	3.05	94.0	87.5	90.8	9.0	92	112	125	146	166	203	250	344	382	420	.9	1.1			
43	10	60.3	.021	1	2.24	95.0	87.9	91.5	8.4	94	110	121	138	155	201	274	347	373	410	.9	1.4			
44	3	60.6	-	-	2.26	94.4	86.6	90.5	8.9	90	110	122	142	166	214	270	356	390	424	.9	1.6			
45	12	61.8	.048	-	2.81	94.5	86.8	90.7	9.0	89	106	119	139	160	202	257	344	381	417	.8	1.5			
46	4	62.1	.036	1	3.13	95.3	87.1	91.2	9.8	91	106	118	137	154	199	256	337	370	411	1.0	2.3			
47	23	60.9	.034	1	2.27	94.6	86.7	90.7	9.4	90	107	120	141	163	208	263	345	380	414	.8	1.6			
48	20	61.9	.024	1	2.66	94.4	87.1	90.8	10.0	89	105	118	137	157	198	249	330	361	399	1.0	1.9			
49	17	61.6	.088	2	2.86	95.4	86.1	90.8	9.3	90	107	119	137	156	201	262	347	378	412	1.0	1.7			
AVERAGE		61.1	.036	1	2.35	94.7	86.9	90.8	9.2	91	107	119	139	159	205	265	345	376	412	.9	1.6			
SAMPLES																								

SAMPLES 291







TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
 AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 3 SOUTHEAST--CONTINUED  
 N.C., S.C., GA., FLA., ALA., AND EASTERN TENN.

PREMIUM-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER			RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES % LOSS
						RES, ASTM D908	MOT, ASTM D357	R+M -- 2		TEMPERATURE, F (CORRECTED TO 760 MM HG)											
										PERCENT EVAPORATED											
										IBP	5	10	20	30	50	70	90	95	EP		
89	2	60.5	-	-	2.84	100.5	91.8	96.2	9.0	96	112	124	147	171	220	264	334	368	412	0.8	1.2
90	16	64.0	0.014	1	2.42	99.8	93.3	96.6	9.2	92	109	121	141	163	217	252	302	329	377	.9	1.3
91	28	62.4	.018	2	2.87	100.1	92.3	96.2	9.0	90	108	121	140	160	210	251	309	335	375	1.1	1.3
92	15	61.6	.010	1	2.98	100.0	92.7	96.4	9.4	90	102	113	129	148	222	274	322	346	394	1.0	1.7
93	27	58.6	.008	2	2.61	100.3	92.0	96.2	8.9	93	110	125	150	176	226	269	331	360	402	1.1	1.6
94	2	61.0	-	-	3.20	100.1	92.6	96.4	9.9	86	102	114	134	154	212	264	326	358	394	.8	1.7
95	8	60.2	.015	-	3.09	100.2	92.5	96.4	9.3	90	107	121	144	164	209	258	333	364	407	.7	1.4
96	20	60.4	.006	2	2.83	100.2	92.4	96.3	8.9	93	109	122	140	159	203	256	334	361	407	1.0	1.6
97	5	58.8	.008	2	3.01	100.2	92.1	96.2	9.1	90	104	118	141	162	215	257	326	362	406	.9	1.9
98	35	62.5	.013	3	2.75	100.2	92.0	96.1	9.1	93	110	126	150	174	215	251	309	340	392	1.1	1.5
99	12	59.4	.010	1	3.18	100.1	92.5	96.3	8.9	89	104	117	138	160	218	266	325	351	399	.7	1.3
100	1	62.4	.024	2	1.05	100.7	92.3	96.5	9.1	86	96	109	128	150	209	249	301	322	356	1.0	2.0
101	5	54.4	.021	-	2.72	101.5	92.2	96.9	8.3	88	108	125	150	181	230	263	310	340	395	.4	1.4
102	8	60.4	.018	-	2.88	100.5	92.2	96.4	8.9	87	106	119	141	166	216	258	319	348	381	.9	1.3
103	8	59.3	.013	-	3.34	100.1	92.7	96.4	9.6	87	101	115	135	157	219	283	329	355	398	1.4	
104	2	58.7	.010	1	3.39	99.9	92.2	96.1	9.9	97	109	120	140	164	223	272	324	348	388	1.0	2.3
105	12	60.3	.021	0	2.98	100.3	92.4	96.4	9.5	90	103	119	139	161	218	266	328	348	402	.8	1.9
106	3	60.2	.009	-	3.06	100.1	93.3	96.7	9.5	90	106	118	138	160	210	258	332	362	418	.8	1.7
107	7	59.9	.013	3	3.54	100.2	92.7	96.5	9.8	87	102	116	141	168	224	268	319	341	387	.8	1.6
108	19	54.0	.002	1	.00	101.4	90.8	96.1	9.7	89	105	122	150	182	230	255	310	339	371	1.0	1.6
AVERAGE		60.0	.013	2	2.88	100.3	92.4	96.4	9.3	90	106	119	141	164	217	262	321	349	393	.9	1.6
SAMPLES	235																				













TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 6 NORTH ILLINOIS  
NORTHERN IND., NORTHERN ILL., EASTERN IOWA, AND WIS.

REGULAR-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS			
						RES, ASTM D908	MOT., ASTM D357		R+M --- 2	TEMPERATURE, F (CORRECTED TO 760 MM HG)											EP	%	%
										PERCENT EVAPORATED													
										IBP	5	10	20	30	50	70	90	95					
190	12	62.8	0.036	-	2.16	95.2	86.7	91.0	8.6	96	111	122	138	153	198	256	336	371	406	1.1	1.5		
191	15	60.9	.037	2	2.21	94.8	87.5	91.2	8.9	95	110	122	140	158	202	257	331	365	405	1.2	1.3		
192	14	61.3	.036	-	2.66	93.9	87.1	90.5	9.4	93	108	121	139	158	201	254	324	350	382	1.0	1.5		
193	2	61.5	.051	-	2.72	95.3	87.0	91.2	8.7	88	107	119	136	154	199	254	333	364	395	.8	1.7		
194	5	60.5	.076	-	2.41	94.1	86.7	90.4	9.6	92	107	119	139	161	209	264	335	365	397	1.0	1.8		
195	14	61.1	.031	1	2.63	94.9	86.4	90.7	9.2	92	107	120	138	159	204	257	323	349	382	.9	1.6		
196	6	60.2	.069	-	2.59	95.3	86.6	91.0	8.9	87	106	117	135	156	203	263	350	384	416	1.0	1.6		
197	3	63.3	-	-	2.38	94.5	86.2	90.4	10.4	89	104	112	130	149	190	242	338	374	419	.9	2.1		
198	3	60.4	.024	-	2.99	95.2	87.5	91.4	9.8	87	103	116	140	165	221	276	351	380	412	.8	2.2		
199	1	60.4	.045	2	2.77	95.0	86.6	90.8	10.3	85	103	117	137	155	204	262	341	372	409	1.0	1.0		
200	3	60.5	.027	-	2.75	95.0	87.5	91.3	9.6	84	100	110	131	156	214	274	350	381	414	1.1	1.9		
201	6	61.0	.059	-	2.38	95.1	86.7	90.9	9.0	90	109	121	140	160	205	258	338	372	404	.9	1.4		
202	6	60.1	.066	1	2.59	95.1	86.7	90.9	9.8	87	104	120	139	161	215	263	340	370	410	1.0	2.5		
203	7	61.2	.062	0	2.53	95.0	86.2	90.6	10.1	90	106	117	137	155	199	256	348	390	418	1.2	2.0		
204	16	60.7	.078	3	2.66	95.2	86.3	90.8	9.0	94	109	121	141	161	204	254	325	355	393	1.1	1.6		
AVERAGE		61.1	.050	2	2.56	94.9	86.8	90.9	9.4	90	106	118	137	157	205	259	338	369	404	1.0	1.7		
SAMPLES																							

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TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 8 LOWER MISSISSIPPI  
MISS., LA., EASTERN AND SOUTHERN ARK., AND WESTERN TENN.

REGULAR-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS % %		
						RES, ASTM D908	MOT, ASTM D357		TEMPERATURE, F (CORRECTED TO 760 MM HG)	PERCENT EVAPORATED												
										IBP												
											5	10	20	30	50	70	90	95	EP			
259	15	63.0	0.081	2	2.76	94.9	86.5	90.7	8.9	93	110	121	135	149	185	235	337	373	411	0.9	1.5	
260	6	61.4	-	-	3.10	94.3	87.0	90.7	9.1	99	116	128	145	164	206	258	348	385	435	1.0	1.0	
261	3	61.5	-	-	2.47	94.1	88.1	91.1	9.9	92	110	118	131	146	190	241	311	340	398	.8	1.2	
262	8	61.5	-	-	2.74	93.6	86.6	90.2	9.4	91	109	125	146	169	214	269	339	369	410	.9	1.8	
263	3	60.8	.039	-	2.52	94.3	86.7	90.5	9.2	92	110	124	145	168	214	263	337	366	411	1.0	1.5	
264	15	60.3	.030	0	2.37	94.3	86.8	90.6	9.1	93	109	124	143	164	210	269	351	376	420	.8	1.6	
265	8	60.7	.023	-	2.53	94.5	86.9	90.7	9.4	93	109	123	143	164	206	258	350	380	415	.9	1.7	
266	16	61.6	.019	-	2.28	94.7	86.7	90.7	9.0	94	111	123	143	162	209	269	347	375	408	.9	1.2	
267	15	59.7	.056	-	2.34	94.2	87.2	90.7	8.5	94	113	126	145	166	213	267	346	374	416	.9	1.2	
268	9	61.2	.015	-	2.51	94.7	86.8	90.8	8.8	93	109	123	144	166	208	258	339	373	412	.8	1.2	
269	3	61.0	-	-	-	94.6	85.6	90.1	9.7	94	108	120	139	160	210	270	349	378	424	1.2	1.4	
270	14	61.3	.011	-	2.38	94.5	86.7	90.6	9.0	93	110	123	142	161	204	261	354	386	410	1.0	1.3	
271	12	60.6	.031	-	2.76	94.0	86.5	90.3	8.2	95	112	125	145	164	208	264	347	378	421	.9	1.4	
272	7	61.4	.022	-	2.27	94.0	86.1	90.1	9.1	92	109	123	141	161	205	253	335	368	411	1.0	1.0	
273	3	62.1	-	-	2.78	94.5	88.1	91.3	8.5	90	111	124	145	165	212	270	361	391	416	1.5	1.0	
274	6	61.0	.033	-	2.86	94.3	86.4	90.4	9.0	92	108	122	140	161	205	260	340	373	414	.9	1.1	
275	17	61.1	.052	-	2.79	93.7	86.1	89.9	9.1	93	110	124	145	168	217	268	341	369	404	.9	1.6	
276	6	60.8	-	-	1.94	94.3	85.8	90.1	9.7	88	108	121	140	160	209	275	366	395	430	.8	1.2	
277	6	61.3	-	-	2.26	93.6	85.9	89.8	8.5	96	115	131	150	167	211	267	338	368	411	1.0	1.3	
AVERAGE		61.2	.034	1	2.54	94.3	86.7	90.5	9.1	93	110	124	142	162	207	262	344	375	415	1.0	1.3	
SAMPLES																						
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TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 12 SOUTH TEXAS

REGULAR-PRICE GASOLINE

ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER				RVP, ASTM D323 LB	DISTILLATION, ASTM D86												RES LOSS %   %			
						RES, ASTM D908		MOT, ASTM D357			R+M ---		TEMPERATURE, F (CORRECTED TO 760 MM HG)													
													PERCENT EVAPORATED													
													IBP													
													5   10   20   30   50   70   90   95   EP													
393	12	61.4	0.027	-	3.01	94.7	88.1	91.4	8.8	96	112	127	145	162	200	245	316	350	407	0.9	1.3					
394	3	61.9	.026	-	2.82	95.0	87.6	91.3	8.6	94	114	124	141	158	193	234	309	342	405	.9	1.1					
395	2	63.2	-	-	3.91	91.0	87.6	89.3	8.8	94	114	126	145	162	199	241	299	322	368	.5	1.5					
396	13	61.9	.026	1	2.47	94.5	86.8	90.7	8.7	94	112	126	145	164	204	255	321	348	388	.9	1.3					
397	13	61.3	.031	1	2.91	94.4	87.6	91.0	8.8	95	111	125	143	161	200	251	335	370	417	.9	1.5					
398	1	61.9	.017	1	3.06	94.2	87.0	90.6	9.1	94	107	122	-	-	197	-	345	-	410	1.0	2.0					
399	3	64.3	.011	-	3.86	92.8	88.2	90.5	9.1	91	112	122	138	152	184	214	272	326	400	.7	.8					
400	9	62.3	.032	-	2.64	94.1	87.6	90.9	8.1	96	114	125	140	154	193	255	332	361	405	1.0	1.2					
401	6	62.9	.038	-	3.24	93.8	87.5	90.7	8.8	94	109	121	139	155	192	237	321	358	411	.9	1.2					
402	4	62.5	.015	1	2.78	93.0	86.4	89.7	8.6	95	112	126	147	164	207	254	351	386	423	1.0	1.5					
403	3	62.7	.049	-	3.24	94.0	87.2	90.6	9.6	91	113	124	143	162	207	260	345	377	420	.9	1.1					
404	12	60.3	.030	-	2.88	93.6	87.1	90.4	8.6	96	115	128	146	165	206	266	345	375	419	.9	1.0					
405	13	61.0	.033	1	2.87	93.7	86.4	90.1	8.7	94	108	124	146	166	213	265	337	368	404	.9	1.7					
406	3	62.1	.037	-	3.19	94.7	87.9	91.3	9.0	95	116	127	144	160	197	241	318	355	407	.8	1.7					
407	3	61.9	.039	-	3.06	92.5	86.7	89.6	8.6	90	107	120	140	159	198	251	325	364	430	.9	1.1					
408	3	62.9	.026	-	2.75	94.1	87.0	90.6	8.7	92	112	122	138	152	186	229	305	341	398	.9	1.6					
409	10	61.5	.041	1	3.31	94.1	87.2	90.7	9.2	92	108	122	141	158	196	247	334	369	410	.9	1.7					
410	4	62.7	.037	3	2.65	95.2	87.0	91.1	9.0	93	114	124	139	153	188	240	333	365	406	1.0	.8					
AVERAGE		62.2	.030	1	3.04	93.9	87.3	90.6	8.8	94	112	124	142	159	198	247	325	357	407	.9	1.3					
SAMPLES																										

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TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 13 SOUTH MT. STATES  
SW KANS., OKLA. AND TEX. PANHANDLES, W. TEX., N. MEX., COLO., UTAH, ARIZ., NEV., AND E. CALIF.

REGULAR-PRICE GASOLINE																						
ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER			RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS % %	
						RES, ASTM D908	MOT, ASTM D357	R+M --- 2		TEMPERATURE, F (CORRECTED TO 760 MM HG)												
										PERCENT EVAPORATED												
										IBP	5	10	20	30	50	70	90	95	EP			
429	27	59.4	0.073	1	2.30	93.1	85.6	89.4	8.5	96	113	128	149	170	215	266	341	373	410	1.0	1.4	
430	3	56.2	.050	-	3.30	91.3	83.0	87.2	8.3	95	120	139	168	194	236	280	344	367	396	.6	1.4	
431	19	61.7	.029	1	2.35	92.2	85.5	86.9	8.4	99	116	129	148	166	206	256	339	378	406	.9	1.0	
432	2	65.9	-	-	3.09	91.7	83.6	87.7	-	-	-	-	-	-	-	-	-	-	-	-	-	
433	34	60.0	.064	1	2.51	92.5	85.9	89.2	7.8	101	119	131	149	167	209	260	345	381	414	.9	1.0	
434	16	59.1	.059	4	2.65	93.1	85.6	89.4	8.0	100	117	129	148	168	211	271	348	380	413	.9	1.1	
435	3	60.7	-	-	1.64	92.2	83.4	87.6	7.1	93	113	125	145	166	211	266	340	366	404	.6	1.9	
436	3	63.6	-	-	2.83	91.9	85.6	86.8	8.0	95	117	129	148	165	199	238	327	374	417	.8	1.2	
437	3	62.8	.006	-	2.42	91.0	87.1	89.1	-	-	-	-	-	-	-	-	-	-	-	-	-	
438	28	62.2	.059	-	2.55	92.2	85.5	88.9	7.3	106	124	136	151	167	202	250	342	379	415	.9	1.1	
439	15	63.4	.028	-	2.72	91.8	85.7	86.8	8.2	98	117	129	146	163	200	245	335	378	413	.9	1.1	
440	24	59.2	.072	3	2.42	93.1	85.7	89.4	7.3	102	121	133	150	168	209	264	344	377	414	1.0	1.0	
441	3	60.4	.104	-	1.80	91.9	84.4	88.2	9.4	93	112	124	142	160	204	264	326	347	400	1.1	.9	
442	3	60.4	-	-	1.14	90.8	84.3	87.6	8.3	92	113	123	141	161	205	262	335	370	404	1.2	1.3	
443	31	59.7	.054	1	2.47	92.7	85.6	89.2	7.8	98	117	129	148	167	209	261	346	381	418	.9	1.0	
444	35	58.1	.043	1	2.08	93.2	85.3	89.3	7.8	100	117	131	150	169	213	267	350	384	422	.9	1.2	
445	3	57.4	.070	-	2.15	92.6	82.8	87.7	-	-	-	-	-	-	-	-	-	-	-	-	-	
446	50	58.8	.052	1	2.41	92.7	84.9	88.6	7.7	101	119	133	154	174	217	268	342	374	409	1.0	1.2	
447	18	58.8	.056	3	2.00	94.0	85.5	89.6	8.3	97	114	129	152	173	218	269	347	380	429	.9	1.7	
448	13	60.3	.026	1	1.98	91.2	85.1	88.2	8.1	97	116	130	152	171	211	260	344	380	408	1.0	1.4	
449	9	61.3	.046	-	2.22	91.6	84.7	88.2	8.2	94	112	125	145	165	207	259	348	384	417	1.0	1.4	
AVERAGE		60.4	.052	2	2.33	92.2	85.0	86.6	8.0	98	117	130	149	169	210	261	341	375	412	.9	1.2	
SAMPLES	342																					













TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
 DIST. 15 PACIFIC NORTHWEST--CONTINUED  
 AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED  
 WESTERN WASH. AND WESTERN OREG.

PREMIUM-PRICE GASOLINE																										
ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86																	RES % LOSS
						RES, ASTM D908	MOT, ASTM D357		H+M --=	TEMPERATURE, F (CORRECTED TO 760 MM HG)																
										IBP	PERCENT EVAPORATED										EP					
											5	10	20	30	50	70	90	95								
506	1	64.5	0.010	1	2.26	99.4	92.1	95.8	10.2	91	109	119	137	157	197	238	308	337	377					1.0	1.0	
507	10	62.8	.013	1	2.74	100.0	91.8	95.9	9.2	91	108	124	148	170	208	243	312	350	394					1.0	1.6	
508	3	62.9	.004	-	2.06	99.7	91.9	95.8	9.6	91	107	122	146	168	210	248	309	334	376					.7	1.3	
509	7	61.9	.010	1	2.29	100.3	91.7	96.0	9.0	91	111	126	152	177	215	249	308	337	390					.8	1.5	
510	7	60.7	.006	1	2.30	100.1	91.2	95.7	9.0	94	111	124	145	169	217	263	321	346	387					.9	1.1	
511	10	61.9	.011	1	2.21	100.2	91.4	95.8	8.9	90	107	126	151	176	216	250	308	339	389					.9	1.9	
512	8	63.6	.017	1	2.07	99.3	91.7	95.5	9.7	88	103	117	137	158	198	237	301	329	368					1.0	1.8	
513	10	61.9	.011	1	2.25	99.9	91.5	95.7	9.1	91	107	123	146	169	213	252	310	347	390					.9	1.7	
514	10	60.8	.007	1	2.03	99.9	90.9	95.4	9.1	92	108	123	146	171	223	269	325	352	393					1.1	1.6	
515	10	59.9	.018	1	2.63	100.0	91.3	95.7	9.3	91	110	125	150	174	216	255	318	350	394					1.0	1.4	
AVERAGE		62.1	.011	1	2.29	99.9	91.6	95.8	9.3	91	108	123	146	169	211	250	312	342	386					.9	1.5	
SAMPLES		76																								

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TABLE 3. - MOTOR GASOLINE SURVEY, SUMMER 1970  
AVERAGE DATA FOR DIFFERENT BRANDS--CONTINUED

DIST. 17 SOUTH CALIFORNIA

REGULAR-PRICE GASOLINE																						
ITEM	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86												RES LOSS	
						RES, ASTM D908	WOT, ASTM D357		TEMPERATURE, F (CORRECTED TO 760 MM HG)												RES	LOSS
						PERCENT EVAPORATED												EP	%	%		
						1BP	5		10	20	30	50	70	90	95							
540	5	57.1	0.094	1	2.19	94.2	85.2	89.7	9.6	88	103	118	142	168	224	283	354	380	414	1.0	1.3	
541	3	-	-	-	-	90.6	84.8	87.7	10.1	89	99	118	141	163	204	251	336	374	420	1.0	3.0	
542	7	58.3	.088	2	2.31	93.9	85.0	89.5	9.2	93	109	122	145	168	217	274	358	390	422	.9	1.2	
543	4	60.4	.072	2	1.05	90.8	83.2	87.0	10.0	90	103	115	136	156	201	255	342	372	412	1.0	1.3	
544	10	57.5	.060	4	1.98	94.5	85.7	90.1	8.2	94	112	126	146	167	217	278	364	392	421	1.0	1.4	
545	4	60.2	.091	2	1.58	91.5	83.5	87.5	9.7	90	105	119	142	164	212	267	351	378	405	1.0	1.1	
546	8	55.5	.029	1	1.21	93.8	85.5	89.7	8.1	93	108	120	139	160	223	300	372	397	427	.9	1.3	
547	10	60.3	.087	1	2.04	94.3	85.3	89.8	8.2	97	114	127	142	157	194	244	328	362	410	1.0	1.4	
548	10	57.5	.090	4	2.08	94.2	85.0	89.6	8.2	96	114	130	151	172	216	271	347	375	415	1.0	1.4	
549	10	58.6	.054	2	.76	93.8	85.2	89.5	9.3	91	104	119	141	162	209	266	362	397	430	1.0	1.6	
550	4	63.5	.036	1	2.40	91.3	85.5	88.4	9.2	95	111	120	134	148	183	241	328	360	411	1.1	1.0	
551	8	56.3	.113	2	2.52	94.5	85.2	89.9	8.9	90	104	122	151	180	236	292	356	381	409	1.0	1.8	
AVERAGE		56.7	.074	2	1.83	93.1	84.9	89.0	9.1	92	107	121	143	164	211	269	350	380	416	1.0	1.5	
SAMPLES																						









TABLE 5. - MOTOR GASOLINE SURVEY, SUMMER 1970  
DATA FOR SOME ADDITIONAL GRADES

## THIRD-GRADE GASOLINE

DISTRICT AND ITEM NUMBERS	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LUSS % %	
						RES, ASTM D908	MOT., ASTM D357		TEMPERATURE, F (CORRECTED TO 760 MM HG)												
									H+M --	PERCENT EVAPORATED											
										2	5	10	20	30	50	70	90	95	EP		
1 564	2	57.8	0.030	2	1.27	93.7	85.7	89.7	9.4	91	106	121	146	170	222	287	346	369	415	1.0	2.0
1 565	1	61.2	.020	1	2.44	95.7	87.3	91.5	9.4	82	94	109	132	154	201	251	325	356	408	1.0	2.0
1 566	1	59.8	.029	2	1.63	92.8	85.2	89.0	9.9	86	98	112	132	152	202	264	353	383	420	1.0	2.0
2 567	5	57.7	.027	2	1.09	93.1	85.1	89.1	9.5	92	108	120	143	168	226	289	353	381	426	1.1	1.9
2 568	2	59.2	.024	1	1.43	93.3	85.5	89.4	9.6	89	103	117	139	162	214	282	354	382	418	1.3	2.3
3 569	3	61.3	.053	2	1.84	92.0	85.3	88.7	9.0	95	108	120	139	161	200	258	338	370	409	1.0	2.0
3 570	1	60.5	.023	2	1.70	93.1	85.8	89.5	8.9	86	99	114	134	156	208	273	360	386	410	1.0	2.0
4 571	4	59.0	.020	1	1.11	92.6	85.5	89.1	9.9	96	112	122	145	167	221	282	347	375	411	1.0	1.9
4 572	4	58.8	.016	2	1.49	92.4	85.8	89.1	9.7	94	111	122	145	167	216	281	355	381	416	1.0	1.9
5 573	2	60.6	.019	1	1.34	92.9	85.9	89.4	9.7	91	106	121	142	164	208	263	344	377	422	1.0	2.0
5 574	3	59.0	.019	2	1.46	92.6	85.5	89.1	9.8	91	106	121	144	167	218	282	358	390	423	1.0	2.0
17 575	1	55.9	—	—	+.00	92.0	83.3	87.7	—	—	—	—	—	—	—	—	—	—	—	—	—
17 576	1	58.2	.060	1	1.50	90.6	84.6	87.6	9.9	94	113	126	151	172	215	261	338	375	421	1.2	1.8
17 577	1	56.1	—	—	+.00	92.0	83.8	87.9	—	—	—	—	—	—	—	—	—	—	—	—	—
AVERAGE		58.9	.028	2	1.53	92.8	85.3	89.1	9.6	91	105	119	141	163	213	273	348	377	417	1.0	1.9
SAMPLES	31																				





TABLE 5. - MOTOR GASOLINE SURVEY, SUMMER 1970  
DATA FOR SOME ADDITIONAL GRADES--CONTINUED

SUPER-PREMIUM GASOLINE

DISTRICT AND ITEM NUMBERS	SAM- PLES	GR., ASTM D287 API	SULF., ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER			RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS %	
						RES, ASTM D908	MOT, ASTM D357	R+M ---		TEMPERATURE, F (CORRECTED TO 760 MM HG)	PERCENT EVAPORATED											
											IBP											
												5	10	20	30	50	70	90	95	EP		
1 591	2	60.9	0.008	1	3.25	102.4	93.5	98.0	9.7	87	102	115	135	158	209	252	316	349	403	1.0	1.5	
2 592	2	61.1	.017	1	3.37	102.3	93.8	98.1	9.2	86	101	115	136	159	213	253	318	351	402	1.0	1.8	
3 593	1	59.8	.007	1	3.34	102.7	93.9	98.3	9.0	88	102	119	142	170	219	258	317	348	400	1.0	2.0	
4 594	4	58.1	.002	1	2.77	101.9	94.5	98.2	9.3	94	112	123	145	171	225	260	305	326	369	1.0	1.5	
5 595	2	58.1	.006	1	2.73	102.2	94.3	98.3	9.6	93	109	121	143	168	225	260	302	327	373	.6	1.4	
13 596	1	59.8	.070	0	2.93	102.3	93.9	98.1	6.9	101	133	148	169	188	221	246	290	320	374	1.0	2.0	
14 597	1	71.4	.010	1	2.20	100.5	97.6	99.1	7.0	106	119	128	144	163	203	226	262	310	370	1.0	1.0	
15 598	1	60.9	.010	3	2.25	101.5	94.7	98.1	7.4	94	119	130	150	170	213	246	309	335	399	1.0	1.0	
16 599	1	62.3	.010	1	2.90	101.3	94.8	98.1	7.8	92	115	125	144	165	212	245	310	341	380	1.0	1.0	
17 600	2	64.8	.100	1	2.87	102.2	94.9	98.6	5.0	99	126	135	152	176	210	234	323	372	384	1.5	1.5	
AVERAGE		61.7	.024	1	2.86	101.9	94.6	98.3	8.1	94	114	126	146	169	215	248	305	338	385	1.0	1.5	
SAMPLES		17																				

17

SAMPLES

TABLE 6 - MOTOR GASOLINE SURVEY, SUMMER 1970  
ANALYSES OF LOW-LEAD CONTENT GASOLINE

DISTRICT	CITY	SAMPLES	GR., ASTM D267 API	SULF., ASTM D1266 WT %	GUM, ASTM D361 MG	LEAD, ASTM D326 G/GAL	OCTANE NUMBER			RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS %							
							RES, ASTM D908	MOT, ASTM D357	R+M ---		TEMPERATURE, F (CORRECTED TO 760 MM HG)	PERCENT EVAPORATED																	
												IBP	5					10					20					EP	
													30	50	70	90	95	30	50	70	90		95	30	50	70	90		95
1	BOSTON	3	48.4	0.012	-	0.00	101.6	90.6	96.1	9.5	86	97	115	144	180	246	276	320	346	388	0.8	2.2							
2	HARTFORD	2	58.0	-	-	.51	96.9	86.9	91.9	9.2	89	110	124	147	174	221	260	312	341	390	.8	1.3							
2	BALTIMORE	3	53.4	-	-	.00	101.4	90.7	96.1	9.2	86	98	116	146	179	224	248	306	334	376	.7	2.3							
2	NEW YORK	4	54.1	.002	0	.05	102.0	90.6	96.3	10.1	90	106	120	148	179	220	237	284	318	361	1.2	1.8							
2	NEW YORK	1	59.1	-	-	.50	96.8	87.4	92.1	9.6	87	102	115	140	165	211	249	315	348	384	.7	2.3							
2	NEW YORK	1	62.3	.025	-	.70	95.3	85.1	90.2	-	-	-	-	-	-	-	-	-	-	-	-	-							
2	PHILADELPHIA	4	54.5	.007	2	.00	100.8	90.4	95.6	10.2	91	108	123	149	183	225	247	299	330	370	.8	1.9							
2	PHILADELPHIA	1	54.0	.020	1	.24	96.7	86.2	91.5	10.6	95	107	117	140	170	233	264	344	385	421	1.0	2.0							
2	PHILADELPHIA	2	57.4	-	-	.43	97.0	87.2	92.1	9.7	86	96	105	122	142	202	258	316	336	366	.7	1.8							
2	RICHMOND	3	53.6	-	-	.00	101.6	90.8	96.2	9.3	90	108	128	158	188	230	250	300	326	364	.7	1.3							
2	RICHMOND	1	57.0	-	-	.39	97.0	87.1	92.1	-	-	-	-	-	-	-	-	-	-	-	-	-							
3	MIAMI	3	55.4	-	-	.00	101.0	90.6	95.8	9.5	86	105	120	147	181	226	253	310	334	370	.7	1.8							
3	MIAMI	1	57.5	.018	0	.39	97.2	86.6	91.9	10.1	92	103	111	127	147	217	277	318	340	423	1.0	2.0							
3	ATLANTA	5	53.3	.002	1	.00	101.5	91.0	96.3	9.7	87	99	119	148	178	225	246	297	332	370	.9	1.6							
3	CHARLOTTE	1	56.5	-	-	.31	97.3	87.0	92.2	-	-	-	-	-	-	-	-	-	-	-	-	-							
4	BUFFALO	4	53.9	.010	0	.00	101.1	90.4	95.8	10.2	86	103	118	146	179	231	255	309	336	390	.8	1.7							
4	CLEVELAND	5	53.5	.014	1	.00	101.4	90.2	95.8	10.7	89	101	115	142	173	230	255	313	341	378	1.0	2.3							
4	PITTSBURGH	1	58.5	-	-	.46	97.1	87.8	92.5	9.0	86	100	114	136	158	212	248	314	350	382	.8	1.2							
4	PITTSBURGH	1	55.7	.002	0	.00	100.2	90.6	95.4	9.6	95	110	124	152	185	227	252	313	336	361	1.0	2.0							



TABLE 6 - MOTOR GASOLINE SURVEY, SUMMER 1970  
ANALYSES OF LOW-LEAD CONTENT GASOLINE--CONTINUED

DISTRICT	CITY	SAMPLES	GR., ASTM D287 API	SULF, ASTM D1266 WT %	GUM, ASTM D381 MG	LEAD, ASTM D526 G/GAL	OCTANE NUMBER		RVP, ASTM D323 LB	DISTILLATION, ASTM D86											RES LOSS % %
							RES, ASTM D908	MOT, ASTM D357	R+M ---	TEMPERATURE, F (CORRECTED TO 760 MM HG)											
											IBP	5	10	20	30	50	70	90	95	EP	
8	LITTLE ROCK	4	54.1	0.007	1	0.00	101.4	91.4	96.4	9.1	88	100	115	150	191	241	268	323	342	375	.9 1.7
8	LITTLE ROCK	1	55.5	-	-	.33	97.0	86.6	91.8	9.3	91	106	118	142	170	222	254	296	318	365	.7 1.8
8	NEW ORLEANS	3	54.5	-	-	.00	101.0	91.2	96.1	9.5	90	109	127	158	190	232	262	324	346	402	.8 1.2
8	NEW ORLEANS	1	56.6	-	-	.33	97.1	86.9	92.0	9.2	92	113	127	150	176	226	264	319	354	407	.9 1.1
8	NEW ORLEANS	1	64.1	-	-	.00	92.1	84.5	88.3	-	-	-	-	-	-	-	-	-	-	-	-
8	SHREVEPORT	4	54.3	.003	2	.00	101.4	91.6	96.5	8.8	85	100	126	160	201	246	270	323	346	393	.9 1.6
8	SHREVEPORT	1	56.1	-	-	.40	97.5	86.5	92.0	-	-	-	-	-	-	-	-	-	-	-	-
8	JACKSON	4	55.1	.014	2	.00	101.3	90.9	96.1	8.7	89	107	125	155	186	232	257	319	347	390	.8 1.2
8	MEMPHIS	1	55.6	-	-	.26	96.8	86.6	91.7	9.5	89	103	114	140	173	230	261	317	351	378	.7 1.3
9	MINNEAPOLIS-ST. PAUL	2	63.6	-	-	.00	91.6	84.5	88.1	9.5	90	112	128	155	182	225	254	326	366	400	.9 2.1
11	DALLAS-FT. WORTH	1	57.6	-	-	.70	97.7	87.7	92.7	-	-	-	-	-	-	-	-	-	-	-	-
11	HOUSTON	4	53.3	.001	2	.00	101.0	91.7	96.4	9.5	96	115	133	160	190	234	260	311	336	374	.8 1.7
12	BAKERSFIELD	1	52.5	.004	-	.61	93.8	85.0	89.4	7.0	103	126	142	166	188	230	270	320	338	378	.8 1.2
13	BAKERSFIELD	1	56.7	.077	-	.50	94.6	84.5	89.6	8.5	98	114	128	153	176	222	269	330	360	411	.8 1.2
16	SAN FRANCISCO	6	58.0	.041	1	.48	94.4	85.9	90.2	10.4	87	103	118	144	173	222	269	335	372	419	1.2 1.5
17	LOS ANGELES	1	55.9	-	-	.00	92.0	83.3	87.7	-	-	-	-	-	-	-	-	-	-	-	-
17	LOS ANGELES	1	56.1	-	-	.65	91.0	82.6	86.8	-	-	-	-	-	-	-	-	-	-	-	-
17	LOS ANGELES	1	56.1	-	-	.00	92.0	83.8	87.9	-	-	-	-	-	-	-	-	-	-	-	-
17	LOS ANGELES	5	58.3	.026	0	.48	93.9	85.4	89.7	9.5	87	102	116	142	168	219	272	359	391	427	.9 1.1



TABLE 8. - Cumulative percents of samples of all grades by motor octane numbers by districts, motor-gasoline survey, summer 1970

Motor octane number	District																	Cumulative total samples
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
82																		1
83		.2							2.1				1.9	1.8		.6		29
84		2.3	1.0	.9	2.4	.4	1.3	.3	4.1	7.1	.9		7.1	9.0	1.9	3.2	9.1	121
85	1.4							2.5	40.4	20.8	10.3		25.7	28.3	1.9	9.5	30.9	499
86	20.0	17.3	16.6	13.0	22.8	16.8	12.6	20.6	49.3	43.8	26.7	5.8	45.7	41.3	17.3	38.6	48.6	1,328
87	45.0	45.3	42.0	42.6	42.3	42.5	38.1	43.2	50.0	50.4	48.0	29.6	48.8	49.8	48.1	48.7	49.7	2,286
88	49.3	50.9	49.3	49.8	51.2	49.6	49.8	50.4	51.4	51.3	52.0	45.3	52.0	50.2	50.0	50.0	50.9	2,569
89	50.7	51.6	51.3	50.9	51.6	50.0	50.6	51.8	52.7	51.7	52.0	51.9	56.7	57.4	50.6	50.0	50.9	2,668
90	51.4	52.9	52.6	52.5	52.0	50.4	50.6	52.6	52.7	52.1	52.0	51.9	61.1	68.6	51.3	51.3	52.6	2,757
91	57.9	62.2	56.9	56.3	55.7	54.0	53.2	57.4	58.9	56.7	57.1	56.4	68.9	77.1	72.4	79.1	77.1	3,142
92	85.0	90.7	81.2	74.2	76.8	67.3	76.6	73.8	85.6	76.7	72.6	70.4	78.2	84.8	99.4	98.1	98.9	4,109
93	99.3	99.5	96.9	92.6	96.3	96.0	96.1	95.5	93.8	98.3	87.5	93.4	90.3	92.4	99.4	99.4	98.9	4,848
94	100.0	100.0	100.0	98.0	100.0	100.0	100.0	100.0	96.6	99.6	95.1	100.0	95.2	99.1	99.4	99.4	98.9	5,031
95				99.6					99.3	100.0	99.1		98.7	99.6	100.0	100.0	100.0	5,085
96				100.0					100.0		100.0		99.9	99.6				5,099
97												100.0		99.6				5,100
98														100.0				5,101

TABLE 9. - Locations and numbers of samples, motor gasoline survey, summer 1970

State	Location	Samples	State	Location	Samples	
<u>District 1 (Northeast)</u>			<u>District 11 (South Plains)</u>			
Maine	Portland	18	Kansas	Coffeyville	6	
Massachusetts	Boston area	122		McPherson	10	
	2 Locations	140		Wichita	62	
<u>District 2 (Mid-Atlantic Coast)</u>			Missouri	Springfield	30	
Connecticut	Hartford	61	Oklahoma	Bartlesville	6	
Maryland	Baltimore	85		Oklahoma City	74	
New Jersey and New York	New York City area	176		Tulsa	78	
New York	Albany	23	Texas	Dallas-Fort Worth	63	
Pennsylvania	Harrisburg	19		8 Locations	329	
Pennsylvania and New Jersey	Philadelphia area	156	<u>District 12 (Southern Texas)</u>			
Virginia	Richmond	91	Texas	Corpus Christi	51	
	7 Locations	611		Houston	147	
				San Antonio	45	
				3 Locations	243	
<u>District 3 (Southeast)</u>			<u>District 13 (South Mountain States)</u>			
Alabama	Birmingham	58	Arizona	Phoenix	75	
Florida	Mobile	30		Tucson	14	
	Jacksonville	25		Bakersfield	76	
	Miami area	123	Denver	103		
	Tampa	2	Las Vegas	24		
Georgia	Atlanta	123	California	Reno	24	
North Carolina	Charlotte	71	Colorado	Albuquerque	90	
South Carolina	Wilmington	20	New Mexico	Amarillo	81	
	Charleston	4		El Paso	74	
Tennessee	Chattanooga	30		Texas	Lubbock	23
	10 Locations	486		Midland	55	
<u>District 4 (Appalachian)</u>			Utah	Salt Lake City	50	
New York	Buffalo	94	12 Locations	389		
	Cincinnati	81	<u>District 14 (North Mountain States)</u>			
	Cleveland	99	Idaho	Boise	28	
	Columbus	15		Billings	60	
Pennsylvania	Toledo	52	Montana	Great Falls	6	
	Northwest Pennsylvania	16	Washington	Spokane	91	
	Pittsburgh	65		Casper	38	
West Virginia	Charleston	24		5 Locations	223	
	8 Locations	446	<u>District 15 (Pacific Northwest)</u>			
<u>District 5 (Michigan)</u>			<u>District 16 (Northern California)</u>			
Michigan	Central Michigan	52	California	San Francisco Bay area	158	
	Detroit	165		1 Location	158	
	Northern Peninsula	29		<u>District 17 (Southern California and Hawaii)</u>		
	3 Locations	246	California	Los Angeles area	154	
				Honolulu	21	
				2 Locations	175	
<u>District 6 (North Illinois)</u>			<hr/>			
Illinois and Indiana	Chicago area	114	Total			
Iowa	Davenport	42	86 locations	5,104		
Wisconsin	Madison	14	<hr/>			
	Milwaukee	56	District	Locations	Samples	
	4 Locations	226			Percent	
<u>District 7 (Central Mississippi)</u>			1	2	140	
Indiana	Evansville	36	2	7	611	
	Indianapolis	67	3	10	486	
	Kentucky	Louisville	57	4	8	446
	Missouri and Illinois	St. Louis area	71	5	3	246
	4 Locations	231	6	4	226	
			7	4	231	
Arkansas	Little Rock	77	8	7	359	
	Baton Rouge	24	9	3	146	
	Lake Charles	2	10	5	240	
	New Orleans	59	11	8	329	
Mississippi	Shreveport	47	12	3	243	
	Jackson	77	13	12	689	
	Memphis	73	14	5	223	
Tennessee	7 Locations	359	15	2	156	
			16	1	158	
			17	2	175	
<u>District 8 (Lower Mississippi)</u>			Total	86	5,104	
Louisiana	Little Rock	77			100.0	
	Baton Rouge	24				
	Lake Charles	2				
	New Orleans	59				
Mississippi	Shreveport	47				
	Jackson	77				
	Memphis	73				
Tennessee	7 Locations	359				
<u>District 9 (North Plains)</u>						
Minnesota	Minneapolis-St. Paul	84				
North Dakota	Fargo	44				
	Williston	18				
	3 Locations	146				
<u>District 10 (Central Plains)</u>						
Iowa	Des Moines	60				
Kansas	Phillipsburg	10				
Kansas and Missouri	Kansas City area	96				
Nebraska	Omaha	64				
	Scotts Bluff	10				
	5 Locations	240				









FIGURE 5.—Map Showing Locations and Numbers of Samples for the National Motor Gasoline Survey, Summer 1970







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